

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

SRM Number: 2722
MSDS Number: 2722
SRM Name: Crude Oil (Heavy-Sweet)

Date of Issue: 03 December 2004

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Description: Crude oil (heavy-sweet) is a commercial crude oil intended for use in the evaluation of methods and the calibration of instruments used in the determination of total sulfur, mercury, and water in crude oil or materials of a similar matrix. SRM 2722, also designated as petroleum crude oil, is a complex mixture of paraffinic, cycloparaffinic, and aromatic hydrocarbons, containing a low percentage of sulfur and trace amounts of nitrogen and oxygen compounds as well as trace amounts of heavy metals. The heavy-sweet Texas crude oil used for this SRM was passed through a 10 µm filter and blended before being ampouled. A unit of SRM 2722 consists of five amber ampoules, each containing approximately 10 mL of crude oil.

Substance: Crude Oil (Heavy-Sweet)

Other Designations: Crude Oil (petroleum crude oil; crude petroleum)

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component:	Petroleum Crude Oil
CAS Number:	8002-05-9
EC Number (EINECS):	232-298-5
SRM Nominal Concentration (mass %):	100
EC Hazard Symbol:	N, T
EC Risk (R No.):	45
EC Safety (S No.):	45, 53

NOTE: May contain low concentrations of toluene, hexane, benzene, and sulfur compounds that vary from 0 % to less than 5 %.

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 3 Reactivity = 0

Major Health Hazards: Respiratory tract, skin, and eye irritation.

Potential Health Effects

Inhalation: Inhalation of petroleum crude oil may cause nasal and respiratory tract irritation. Vapors released by various compounds in crude oil may cause asphyxiation and anesthetic effects including headache and dizziness. Inhalation may also produce chemical pneumonitis. Hydrogen sulfide in the crude oil can vaporize to form a lethal gas.

Skin Contact:	Skin contact with petroleum crude oil may cause irritation. Repeated or prolonged exposure to the skin may cause an allergic reaction or dermatitis. Redness, itching, cracking of the skin, and inflammation are possible with prolonged or repeated exposure. Other adverse effects may include photosensitization, pigmentation, and acneform dermatitis manifested by plugged sebaceous follicles, nodules, and lesions.		
Eye Contact:	Eye contact may cause irritation. Repeated or prolonged exposure to the eye may cause conjunctivitis.		
Ingestion:	Ingestion may cause nausea, vomiting, diarrhea, and other gastrointestinal disturbances. Aspiration into the lungs may cause pneumonitis. Chronic ingestion may result in vomiting, moderate or extreme bloating, aspiration pneumonia, weight loss, and mild mental depression.		
Listed as a Carcinogen/ Potential Carcinogen:	Yes	No	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	In the National Toxicology Program (NTP) Report on Carcinogens.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	In the International Agency for Research on Cancer (IARC) Monographs.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	By the Occupational Safety and Health Administration (OSHA).

4. FIRST AID MEASURES

Inhalation:	If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration by qualified personnel. Obtain medical assistance if necessary.
Skin Contact:	Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Obtain medical assistance if necessary.
Eye Contact:	Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance if necessary.
Ingestion:	DO NOT induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Get immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards:	Petroleum crude oil is a fire hazard. Vapor/air mixtures are explosive above the flash point. Vapors are heavier than air. Vapors may travel along the ground and may ignite by distant ignition sources such as pilot lights, sparks, electric motors, static discharge or other ignition sources. Flashbacks may occur.
Extinguishing Media:	For small fires, use fire extinguishing media such as carbon dioxide, dry chemical, regular foam, or water spray. For large fires, water spray, fog, or foam can be used.
Fire Fighting:	Move containers from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Avoid using straight water streams. Use extinguishing agents appropriate for surrounding fire. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).
Flash Point (°C):	< 21 °C (70 °F)
Method Used, PMCC:	ASTM D 93 (A)-00
Autoignition Temp. (°C):	No data available.
Flammability Limits in Air	
UPPER (Volume %):	No data available.
LOWER (Volume %):	No data available.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release:	Avoid heat, flames, sparks, and other sources of ignition. Absorb small spills with sand or other non-combustible material. Collect spilled material in an appropriate container for disposal. For large spills, isolate the hazard area, and keep unnecessary people away. DO NOT touch spilled material. Collect small spilled material in an appropriate container for disposal.
Reportable Quantity:	Spills and releases of petroleum crude oil are subject to reportable quantities (RQ) under Title III of SARA. The RQ, however, is greater than the unit quantity provided for SRM 2721. See Section 15, "Regulatory Information".
Disposal:	Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Storage:	Store and handle in accordance with all current regulations and standards. Store unopened ampoules under normal laboratory conditions away from direct sunlight in a well ventilated area, away from sources of heat, open flames, and strong oxidizing materials. Use in a well ventilated area, away from sources of heat, open flames, and strong oxidizing materials.
Safe Handling Precautions:	See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:	Petroleum Crude Oil OSHA (PEL): 1600 mg/m ³ TWA (400 ppm TWA)
Ventilation:	Use a local exhaust ventilation system. Ensure compliance with applicable exposure limits.
Respirator:	A respirator is NOT required under normal conditions and adequate ventilation. For conditions of frequent use or heavy exposure where exposure exceeds exposure limits, respirator protection may be needed. Refer to the "NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84" for selection and use of respirators certified by NIOSH.
Eye Protection:	Wear safety goggles. DO NOT wear contact lenses in the laboratory. An eye wash station should be readily available near areas of use.
Personal Protection:	Wear appropriate protective clothing and neoprene or nitrile gloves to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component:	Petroleum Crude Oil
Appearance and Odor:	Amber to black viscous liquid. Odor varies: mild hydrocarbon or rotten-egg odor.
Relative Molecular Weight:	Not determined.
API Gravity @ 60 °F:	23.7 API
Water Solubility:	Slight to negligible.
Boiling Point Range:	37.38 °C to 537.78 °C (100 °F to 1000 °F)
Volatility:	Not available.

10. STABILITY AND REACTIVITY

Stability:	<u> X </u> Stable <u> </u> Unstable
	Stable at 21 °C (70 °F), 760 mm pressure.
Conditions to Avoid:	Avoid heat, flames, sparks, and other sources of ignition. Avoid contact with strong oxidizing materials.
Incompatible Materials:	Petroleum crude oil is incompatible with strong oxidizing materials.
Fire/Explosion Information:	See Section 5, "Fire Fighting Measures".
Hazardous Decomposition:	Oxides of carbon. Adlehydes.
Hazardous Polymerization:	<u> </u> Will Occur <u> X </u> Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry:	<u> X </u> Inhalation <u> X </u> Skin <u> X </u> Ingestion
Toxicity Data:	Rat, Oral LD ₅₀ : > 4.3 g/kg
Mutagenic, Tumorigenic Reproductive Data:	Investigated as a tumorigen, mutagen, and reproductive effector.
Health Effects (Acute and Chronic):	See Section 3: "Hazards Identification" for potential health effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data:	Oil coating can kill birds, fish, algae, and plankton. Keep out of water and sewage systems.
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13. DISPOSAL CONSIDERATIONS

Waste Disposal:	Dispose in accordance with all applicable federal, state, and local regulations. Subject to disposal regulations, U.S. EPA 40 CFR 261.
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14. TRANSPORTATION INFORMATION

U.S. DOT and IATA:	Petroleum crude oil; UN1267; Hazard Class 3; Packing Group II.
Canadian Transportation or Dangerous Goods:	Petroleum crude oil; UN1267; Hazard Class 3; Packing Group II.
Land Transport ADR and RID:	Petroleum crude oil; UN1267; Hazard Class 3; Packing Group II.
Maritime Transport:	Petroleum crude oil; UN1267; Hazard Class 3; Packing Group II.

15. REGULATORY INFORMATION

U.S. Regulations:	This product may contain hydrogen sulfide. Hydrogen sulfide has been identified as a CERCLA Hazardous substance which in case of a spill or release may be subjust to SARA reporting requirements. CERCLA Sections 102a/103 (40 CFR 302.4): Hydrogen sulfide: 45.4 kg (100 lbs) RQ (NOTE: The quantity specified is greater than the unit quantity provided in SRM 2721.) SARA Title III Section 302 (40 CFR 355.30): Hydrogen sulfide: 226.8 kg (500 lbs) RQ (NOTE: The quantity specified is greater than the unit quantity provided in SRM 2721.)
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SARA Title III Section 304 (40 CFR 355.40): Hydrogen sulfide: 45.4 kg (100 lbs) RQ (NOTE: The quantity specified is greater than the unit quantity provided in SRM 2721.)

SARA Title III Section 313 (40 CFR 372.65): None.

OSHA Process Safety (29 CFR 1910.119): Hydrogen sulfide: 680.4 kg (1500 lbs) TQ (NOTE: The quantity specified is greater than the unit quantity provided in SRM 2721.)

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE:	Yes.
CHRONIC:	Yes.
FIRE:	Yes.
REACTIVE:	No.
SUDDEN RELEASE:	No.

CANADIAN Regulations: WHMIS Classification: B2

EUROPEAN Regulations

EC Classification: Carcinogen Category 2.

EC Hazard Symbol:	N	Dangerous for the environment.
	T	Toxic

EC Risk Phrases: R45 May cause cancer.

EC Safety Phrases: S45 In case of accident or if feeling ill, seek medical advice immediately (show label where possible).
S53 Avoid exposure – obtain special instructions before use.

National Inventory Status

U.S. Inventory (TSCA): Listed on inventory.

TSCA 12 (b)

Export Notification: Not listed.

16. OTHER INFORMATION

Sources: MDL Information Systems, Inc., MSDS *Petroleum-Crude Oil*, 18 September 2003.
MSDS, Marathon Petroleum Crude Oil, 02 February, 2004.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use as a guide in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.